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Drug Abuse Urine Tests: False-positive Results

Lead author: Joseph A. Woelfel, Ph.D., FASCP, R.Ph., Assistant Editor

Health care professionals are frequently asked questions about false-positive drug testing results. Testing is a common practice in work settings, rehabilitation programs, the military, and legal and judicial venues. Home testing is popular with the availability of test kits to alleviate parental or job-seeker concerns. Federally regulated workplace drug testing and most private sector workplace programs specify urine testing as their initial standard test. Other expanded tests may be required in some settings. Confirmatory tests are sometimes performed using urine or other specimen sources such as blood, saliva, or hair and usually involve chromatography and mass spectrometry. The federal standard urine test checks for five categories of drugs: amphetamines, cannabinoids, cocaine, opiates, and phencyclidine. These urine screening tests use immunoassay techniques that are reliable, easy-to-use, and relatively inexpensive. The immunoassays contain drug-specific antibodies which bind with subject drugs in the urine. They eliminate the majority of false-negative results but may be associated with some false-positives due to crossreactivity with chemically similar drugs. Knowing which substances cross-react and at what levels is often helpful in alleviating concerns and identifying follow-up testing.

(See detail document 190212 (The Tricks and Traps of Drug Testing) for information on circumventing drug tests).

Federal Standard Urine Immunoassay Drug Abuse Screening Tests

Substance Abuse Category	Urine Detection Cut-off Level (ng/mL) ¹	Detection Period after Last Dose (approximate days) ^{2,3}	Examples of Substances Associated with False-positive Results ^{4,7,9}	Comments
Amphetamines	1000	2 – amphetamine 3 to 4 – methamphetamine	amantadine amphetamine benzphetamine bupropion chlorbenzorex (Mexico) chlorpromazine desipramine dextroamphetamine ephedrine fenproporex (Mexico) labetalol methamphetamine	No studies have shown false-positive tests associated with passive inhalation of methamphetamine. ¹⁰

More . . .

Substance Abuse Category	Urine Detection Cut-off Level (ng/mL) ¹	Detection Period after Last Dose (approximate days) ^{2,3}	Examples of Substances Associated with False-positive Results ^{4-7,9}	Comments
			methylenedioxy-methylamphetamine (MDMA, <i>Ecstasy</i>) pemoline pseudoephedrine phenylephrine ritodrine selegiline trazodone trimethobenzamide	
Cannabinoids	50	2 to 8 – single use ¹¹ 20 to 30 – chronic use	dronabinol efavirenz hemp-containing foods: <i>Seedy Sweeties</i> , <i>Cranberry Coconut</i> <i>Hemp Bar</i> ibuprofen ketoprofen naproxen piroxicam proton pump inhibitors tolmetin	Studies have demonstrated that levels of passively-inhaled marijuana are insufficient to test positive with the screening cut-off of 50 ng/mL. ¹⁰
Cocaine	300	2 to 3 – single use 4 to 8 – chronic use	coca leaf teas topical anesthetics containing cocaine	Positive urine drug screens are highly unlikely for passively-inhaled cocaine due to the cut-off. ¹⁰
Opiates	2000	1 to 2 – opium 1 to 4 – heroin 3 to 4 – morphine 1 - meperidine	dextromethorphan heroin poppy seeds and oil opioid prescription medications: codeine hydromorphone	In 2000 detection cut-off limits were raised from 300 ng/mL to 2000 ng/mL to reduce the frequency of false-positive results from poppy seed exposure. ⁷ Ingestion of poppy seed

Substance Abuse Category	Urine Detection Cut-off Level (ng/mL) ¹	Detection Period after Last Dose (approximate days) ^{2,3}	Examples of Substances Associated with False-positive Results ^{4-7,9}	Comments
			hydrocodone morphine quinine quinolone antibiotics rifampin	streusel or Danish pastry can produce urinary levels above this threshold. ¹²
Phencyclidine (PCP)	25	3 to 7 – single use 14 to 30 – chronic use	chlorpromazine dextromethorphan diphenhydramine ketamine methadone ¹³ thioridazine	Detection periods increase with increasing body fat ⁴

Several home-drug test kits are available on the internet, in pharmacies, or directly from the manufacturer. Some products that have been specifically approved by the FDA as over-the-counter in vitro diagnostic devices are listed here. These kits use urine immunoassay techniques. Most provide the shipping materials needed for mailing confirmatory specimens if a positive test result occurs. Other tests using urine, sputum, or hair specimens are available through internet sources but may not be FDA approved.

FDA-Cleared OTC Home Urine Drug Abuse Tests⁸

(This chart represents some of the available test kits).

Product Name	Availability/Information*	Cost**	Time to Results	Comments
"QuickScreen" At Home Drug Test	Phamatech, Inc. 10151 Barnes Canyon Rd. San Diego, CA 92121 888-635-5840 http://www.phamatech.com	\$29.95 plus shipping and handling	10 minutes	The <i>At Home Drug Test</i> detects amphetamine, methamphetamine, opiates, marijuana and cocaine. The kit includes collection container, instructions, a handbook with frequently asked questions and materials needed to ship the sample to the laboratory if the screening device indicates the presence of drugs.

Product Name	Availability/Information*	Cost**	Time to Results	Comments
<i>Peace of Mind 5 Panel Home Drug Test</i>	Advanced Diagnostics Laboratories 850 E Franklin Rd. Ste. 407 Meridian, ID 83642-8916 http://www.adldrugtest.com	\$31.00 plus shipping and handling	3 minutes	Tests for amphetamine, methamphetamine, opiates, marijuana, phencyclidine, and cocaine. Laboratory confirmation included at no extra charge.
<i>Accu-Stat Drugs of Abuse Home Test Cup</i>	Accu-Stat Diagnostics 11 Orchard Road Suite 108 Lake Forest, CA 92630 949-916-7560 http://www.accu-stat.com	\$27.99 plus shipping and handling	4 minutes	Test for the use of marijuana, cocaine, opiates, methamphetamine and phencyclidine. The kit includes collection container, instructions, a handbook with frequently asked questions and materials needed to ship the sample to the laboratory if the screening device indicates the presence of drugs in the sample.
<i>ADC Advantage Marijuana and Cocaine Home Test</i>	Inverness Medical Innovations – Advantage Diagnostics (ADC) 764 San Aleso Ave Sunnyvale, CA 94085 800.784.4414	\$18.50, includes shipping	Less than 10 minutes	Tests for marijuana and cocaine. The kit includes collection container, instructions, a handbook with frequently asked questions and materials needed to ship the sample to the laboratory if the screening device indicates the presence of drugs in the sample. Currently their 5 drug test kits are not available to consumers.

* Available at select retail stores or internet suppliers, unless otherwise noted.

** Cost information is approximate as of the time this chart was prepared. It is the manufacturer internet price listed as of January 10, 2005.

Users of this document are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and Internet links in this article were current as of the date of publication.

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